

The structure and operation of the prothoracic aortic sinus can be best observed in living, newly hatched, first instar larvae with an ordinary compound microscope. In older *Anopheles* larvae the details of the sinus tend to be obscured by overlying fat body and pigment cells. The sinus cannot be observed in intact living pupae and adults, but histological preparations (sagittal sections) of these stages show it to be present and fundamentally unmodified. For the most part, however, sectioned material is not suitable for demonstration of the prothoracic sinus.

Subsequent to these observations, larvae of *Culex pipiens* and *Aedes aegypti* were examined and structures similar to the one described were found in them.

#### ON THE RECOGNITION OF TWO ECONOMIC SCAPHYTOPIINE LEAFHOPPERS

(HOMOPTERA, CICADELLIDAE)

BY DAVID A. YOUNG, JR., *Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Washington, D. C.*

Recently, while attempting to identify some leafhoppers submitted by E. C. Klostermeyer, of the State College of Washington, I noted some confusion in previous work. This paper is an effort to clarify the identity of two species of *Scaphytopius*, both of which have been implicated as vectors of virus diseases of plants.

Van Duzee (1908), in discussing what he believed to be a distinct species, wrote: "The larger and paler specimens from Utah have been determined for me as Baker's *latus*, and in all essential characters they seem to agree fairly well with the description of that species. From these paler forms they run by almost insensible gradations in form and colour toward the smaller and darker *acutus*. In all, however, the vertex is longer, the oblique veins of the costa are more regularly placed, and the face is either entirely pale or but slightly infuscated anteriorly, with the basal angular pale line never entirely obsolete. I believe these should be separated from *acutus*, but whether they are the true *latus* of Baker is perhaps questionable."

At this time Van Duzee evidently had a segregate in mind, although it is doubtful that he kept specimens separated as examples.

A short time later (1910, p. 220), he wrote the following, after a formal description of *Platymetopius acutus* (Say): "Toward the north and west this species varies to a lighter almost fulvous color with little if any black beneath, the face

is paler, scarcely shading to darker on the sides of the cheeks, and the vertex is more strongly produced, at least one-half longer than broad between the eyes. I call this variety *dubius* to distinguish it from the typical form with which it is connected by almost insensible gradations. It in turn forms a connecting link with *oregonensis*, which, however, I believe to be a distinct species. I have listed this as *latus* in Canadian Entomologist, xl, p. 157, 1908."

It is noteworthy that Utah was not specifically mentioned in the latter quotation, and that the description is valid. At this time Van Duzee presumably *did* choose specimens to represent his concept, for three cotypes of this "variety" were found in the U. S. National Museum collection, and seventeen additional specimens from the type series were borrowed through the kindness of Dr. Edward S. Ross, of the California Academy of Sciences.

In spite of the mention of Utah in the first reference to the species, and the phrase "to the north and west" in the actual description, Van Duzee, at some undetermined later date, chose a lectotype male from Quinze Lake, Quebec, since a somewhat damaged male bearing a lectotype label and "dubius" in what appears to be Van Duzee's handwriting was found in the type series loaned by Dr. Ross. Apparently this choice of lectotype was not published.

Faced with the choice of validating the intended lectotype selection or selecting a lectotype conforming to the original description as nearly as possible, the writer has chosen the latter. A male cotype in the California Academy of Sciences collection, bearing the label, "Rifle, Col. 7-25-00, E. P. Van Duzee Collector," is hereby designated lectotype of *Scaphytopius dubius* (Van Duzee). None of the specimens in the type series were from Utah, and none were from locations more "to the north and west." The pin also bears a yellow paratype label, presumably affixed by Van Duzee at some date following the original description. The type series is mixed. The male genitalia of the lectotype here selected are illustrated in the accompanying figure.

Klostermeyer and Menzies (p. 456, footnote 4) have called attention to some of the confusion which has existed with regard to the name *dubius*. The above selection of a lectotype eliminates *dubius* (Van D.) as the species involved in the transmission of witches' broom virus of alfalfa, since material submitted by Dr. Klostermeyer appears to be distinct from the lectotype. This virus vector has been determined by the writer as a form of *Scaphytopius acutus* (Say), although the aedeagus is slightly different from that illustrated by DeLong who

designated a neotype for the Say species. The aedeagus of *S. acutus* (Say), sens. DeLong, although apparently somewhat variable, is narrower than that of *dubius* in the sense employed here, and the preapical lobes of the styles in ventral aspect are narrower than those of *dubius*. Considerable study, and perhaps rearing experiments eventually, will be necessary to learn whether the name *acutus* (Say) will have to undergo further restriction.

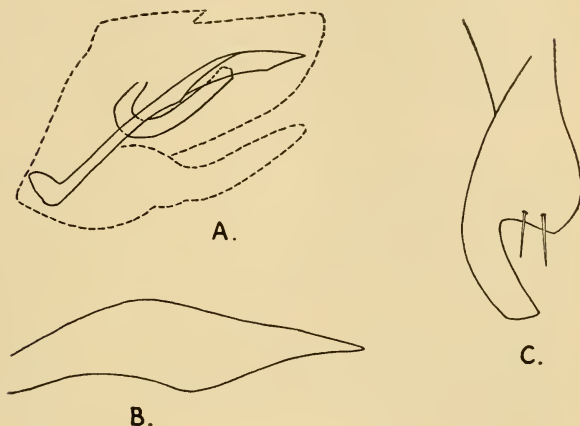
Hepner (1947, p. 511), apparently without recourse to type material, relegated *dubius* to synonymy under *Scaphytopius acutus* (Say). His third illustration of *acutus* (*op. cit.*, pl. XXVII, fig. 61) is a form closely related to the lectotype of *dubius* selected here, but apparently with narrower paraphyses.

Severin (1947, pl. I, figs. A and B) illustrated a species which conforms to DeLong and Severin's (see below) later description of their conception of *dubius*, but he mislabeled it in the legend as *Cloanthanus irroratus* (Van Duzee). DeLong and Severin (1947, p. 530) redescribed and illustrated their conception of *dubius* (Van D.), and stated that the species appears to be confined to the West Coast and probably to California.

Through the kindness of Norman W. Frazier, of the University of California, I have been able to study "material used by Dr. Severin in his virus tests, bred from material I [Frazier, *in litt.*] originally collected May 23, 1942 at Dry Creek in Napa County." Seven males and one female were examined. The species appears to be distinct from the species represented by the lectotype of *dubius*, and is here treated as ***Scaphytopius delongi***, new species. It has been adequately described and illustrated in the DeLong and Severin reference (1947), and in Severin (1947, pl. I, figs. A and B (not C and D, as the legend states)). The species is represented by the holotype male, allotype female (in U. S. N. M. collection, cat. no. 61509), four paratype males (in N. W. Frazier collection), and two paratype males (in DeLong collection).

*Scaphytopius delongi* is related to *S. dubius* (Van D.) and to a complex of western forms which includes *graneticus* (Ball), *utahensis* Hepner, *canus* Hepner, and *oregonensis* (Baker). Holotypes, allotypes, or paratypes have been examined for all except *utahensis* in connection with this study. From *dubius*, *delongi* may be distinguished by its twice-crossed paraphyses in ventral aspect, whereas its sharply deflexed paraphyses in lateral aspect will distinguish it from *graneticus*. This group of species, like the forms of *acutus* (Say), is greatly in need of a careful study which will include

a consideration of intraspecific variation. It is possible that some of the problems cannot be solved in the laboratory.



*Scaphytopius dubius* (Van Duzee) lectotype: A—outline of male genital capsule, lateral aspect, showing aedeagus and one aedeagal paraphysis; B—left paraphysis, apical portion, lateroventral (broadest) aspect; C—style, apical portion, ventral aspect (all drawn *in situ*).

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